EASD ANNUAL CONGRESS 2017

FIL - FEIRA INTERNACIONAL DE LISBOA AND MEO ARENA,
11TH–15TH SEPTEMBER 2017
LISBON, PORTUGAL

Welcome to the European Medical Journal review of the 53rd Annual Meeting of the European Association for the Study of Diabetes

Citation: EMJ Diabet. 2017;5[1]:12-26. Congress Review.

Sunny Lisbon played host to this year's European Association for the Study of Diabetes (EASD) 53rd Annual Meeting, welcoming 15,000 attendees from across the world to take part in the sharing of knowledge, research, and discussion. Lisbon was, indeed, a most appropriate location for this congress, being the home of the Portuguese Diabetes Association (APDP), the world's first recorded diabetes association. The APDP is now a world-renowned model for the standard of care in diabetes.

EASD's annual meetings draw attendees, research, and presenters from all over the world. Known internationally as a centre of excellence, the association continually strives to provide attendees with up-to-the-minute information through talks, study groups, poster presentations, late-breaking abstracts, and more. This year, >2,000 abstracts were submitted for consideration by the board, 1,200 of which were selected for presentation at the congress. The poster presentations of these abstracts were available throughout the duration of the congress, allowing attendees to view them at their leisure and ensuring plenty of time to visit as many topics as possible.

EASD President Prof Juleen Zierath, speaking at the opening ceremony, discussed the importance of research, care, and education in achieving the goals of the EASD. She spoke of the 20 study groups within EASD, focussing on research into cardiovascular disease, diabetic foot, nutrition, and other basic research into topics of comorbidities and aspects of diabetes care affecting all patients. Attendees were invited to visit the EASD website for further information on joining the study groups.

Prof Zierath praised honourary EASD Secretary Prof Francesco Beguinot for his work in assembling the scientific programme for the meeting with the help of other members of the committee. The programme this year was vast and spanned a diverse range of topics sure to interest diabetologists from across the board. Satellite and sponsored symposia kicked off the event, followed by the presidential address and the highly coveted Claude Bernard lecture. This year the prestigious lectureship, which recognises outstanding contributions to the advancement

of knowledge of diabetes and related metabolic diseases, was awarded to Prof Bernard Thorens, Center for Integrative Genomics, University of Lausanne, Lausanne, Switzerland. Prof Thorens chose to give his lecture on the topic of a glucose-centric view on diabetes pathogenesis: from islet biology to integrated physiology and precision medicine. The programme went on to feature talks and discussions on the topics of outcome trends, beta cells, hypoglycaemia, genome editing, adipose tissue, and much more, all peppered with poster sessions for both experienced and emerging clinicians to showcase their work.

> “...a number of distinguished researchers were recognised for their outstanding work in advancing knowledge in the sphere of diabetes.”

Alongside the aforementioned Claude Bernard lecture, a number of distinguished researchers were recognised for their outstanding work in advancing knowledge in the sphere of diabetes. This year’s Camillo Golgi prize was awarded to Prof Brian Frier, Queen’s Medical Research Institute, University of Edinburgh, Edinburgh, UK, for his work in the pathophysiology of hypoglycaemia in humans, with particular focus on diabetes. He gave a lecture titled: ‘Recurrent hypoglycaemia in diabetes: the long-term complications’. Prof Jorge Ferrer, Imperial College London, London, UK, was awarded the Albert Reynold prize for his research into the regulation of the genome in pancreatic beta cells, applying this knowledge to advancing understanding of human diabetes.

In the following pages, we have summarised what we believe to be some of the most pertinent topics and stories that were brought forward at this year’s EASD congress. We hope you will enjoy reliving the highlights of the 53rd annual meeting of the EASD as much as our team did, and we look forward to bringing you even more cutting-edge research and innovation in next year’s review of EASD 2018, set to take place in Berlin, Germany.

Study Associates Sodium Intake with Type 2 Diabetes Risk

RISKS of developing Type 2 diabetes mellitus (T2DM) and latent autoimmune diabetes in adults (LADA) has been linked to sodium intake, according to new research from the Institute of Environmental Medicine (IMM), Karolinska Institutet, Stockholm, Sweden, presented at the EASD annual meeting 2017 in Lisbon, Portugal, reported on 15th September, 2017.

> “We confirm an association between sodium intake and T2DM.”

Sodium is mainly sourced from salt (sodium chloride) in the diet. LADA is a sub-type of Type 1 diabetes mellitus, in which pathology is the same: insulin-producing cells in the pancreas are destroyed by the body’s immune system. However, the onset of LADA occurs much more slowly, sometimes over many years. As a result, LADA is often mistaken for T2DM, as it presents later in adult life.

This population-based study assessed risk factors for developing T2DM and LADA. There were 1,136 T2DM patients involved, 355 LADA patients and 1,379 controls. Each patient was provided with a food questionnaire, assessing dietary intake and calculating daily calorie, nutrient, and sodium intake. The participants were further divided into three groups based on their daily sodium intakes: a) low: <2.3 g (<6.0 g salt equivalent); b) medium: 2.3–2.9 g (6.0–7.3 g salt equivalent); and c) high: >2.9 g (>7.3 g salt equivalent).

Sodium intake was found to increase T2DM development risk by an average of 65%. Those in the high sodium consumption group had a 72% higher risk of developing T2DM compared to the low sodium consumption group. Sodium intake affected the risk of developing LADA even more, with a risk increase of 82% with each gram of sodium consumed each day. The results of this study have great implications for potentially at-risk diabetes patients. “We confirm an association between sodium intake and T2DM,” stated the authors, highlighting the very real possibility of a new diabetes prevention method through a change in diet.

Low-Fat Dairy Consumption May Be Associated with Reduced Risk of Cardiometabolic Disease

DISTRIBUTION of fat within the body could explain why the consumption of some dairy products appears to lower the risk of Type 2 diabetes mellitus, reveals a study presented

in a press release dated 14th September, 2017, at the EASD annual meeting 2017 in Lisbon, Portugal.

> Our preliminary findings suggest a possible mechanism by which total low-fat dairy products and milk may be associated with a lower risk of obesity-related metabolic disorders.

Researchers in this study, from the Medical Research Council (MRC) Epidemiology Unit, University of Cambridge, Cambridge, UK, examined 12,000 adults aged 30–65 from 2005–2015, recording their daily dairy intake via questionnaires and measuring markers of body composition via X-ray scans and ultrasound. These markers aimed to generate a holistic picture of body composition, including body fat distribution and muscle mass, by recording the ratio of visceral adipose tissue to subcutaneous adipose tissue (VAT/SCAT), total and peripheral body fat mass, and total and appendicular body lean mass.

After correction for confounding factors, such as lifestyle and socio-demographic, the results found total dairy consumption and high-fat dairy consumption to be unrelated to any body composition marker. However, the higher consumption of low-fat dairy products was related to a lower VAT/SCAT ratio. "Our preliminary findings suggest a possible mechanism by which total low-fat dairy products and milk may be associated with a lower risk of obesity-related metabolic disorders. This is via the more favourable distribution of abdominal visceral fat relative to subcutaneous fat and body lean mass", explained lead researcher Dr Nita Forouhi, University of Cambridge.

Whilst specific subtypes, such as yoghurt, cheese, butter, and ice-cream, were not directly linked to this protective effect, a secondary finding from this study suggested that drinking a glass of low-fat milk every day is significantly associated with higher body lean mass (0.33 kg on average). This may represent the milk's effect on bone mass, muscle mass, or both.

The researchers point out that this type of study is unable to verify direct causality, but they are hopeful that this new direction of inquiry will bear fruit in future studies. "Our study certainly is hypothesis-generating and should also stimulate future research by others", concluded Dr Forouhi.

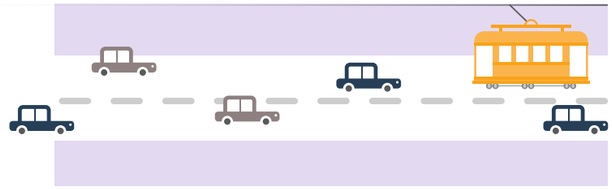
Neighbourhood Design has a Major Impact on the Onset of Prediabetes

WALKABILITY levels in urban environments have a significant impact on the risk of immigrant populations developing prediabetes, according to research displayed in a EASD press release dated 15th September, 2017.

> We believe further research is required to guide the design of population interventions and policies to target the social and environmental factors perpetuating the development of prediabetes (and subsequent diabetes) among high-risk populations.

The researchers, from St. Michael's Hospital and the Institute for Clinical Evaluative Sciences, Toronto, Canada, built on previous research showing that the development of diabetes is more likely in immigrants living in less walkable areas. The level of walkability is decided by factors such as residential density and availability of shops and services. This study compared the prevalence of prediabetes in different ethnic groups among immigrants living in the highest 20% of walkability areas versus the remaining 80% in four cities in Southern Ontario.

There were 193,899 adults selected for the study, with 20,324 from Sub-Saharan Africa and the Caribbean, 38,441 from South Asia, 18,541 from South-East Asia, and 14,227 from Western Europe. It was discovered that the Western European population had a lower overall incidence of prediabetes than the other ethnic groups, but these differences were much more pronounced in low walkability neighbourhoods and reduced or even eliminated in high walkability areas. For instance, while prediabetes was twice as prevalent in the Sub-Saharan African and Caribbean population than in Western European populations among those residing in low walkability areas, this variation was just 20% in high walkability neighbourhoods. A similar trend was seen in the West Asian/Arab populations, with a 50% higher prevalence rate compared to Western European populations in low walkability neighbourhoods dropping to a statistically insignificant level in the high walkability areas. However, among South Asians, the incidence of prediabetes was around twice as high as Western European populations in both low and high walkability areas.



The authors stated: "The risk of prediabetes development among immigrant populations may be amplified by unexpected factors such as neighbourhood designs. We believe further research is required to guide the design of population interventions and policies to target the social and environmental factors perpetuating the development of prediabetes (and subsequent diabetes) among high-risk populations."

Diabetes Risk Associated with Spousal Obesity

OBESITY or Type 2 diabetes mellitus (T2DM) and their effects on patients' spouses were the subject of two recent studies reported in a EASD press release dated 12th September, 2017, which exposed findings that could lead to increased accuracy in recognising at-risk patients. This is the first time that research has focussed on sex-specific risk of T2DM in relation to spouses. The team, led by Dr Adam Hulman, Department of Public Health, Aarhus University, Aarhus, Denmark, hypothesised that high-risk behaviours were likely to be shared by couples, including poor eating habits and physical inactivity.

The first study enrolled 3,650 men and 3,478 women aged ≥50 years. The participants were selected from the English Longitudinal Study of Ageing (ELSA), which provided a nationally representative sample of participants. Interviews were carried out at 2.5-year intervals from 1998–2015 and T2DM diagnoses were drawn from self-reports or clinical examination. The researchers adjusted results to account for additional contributing factors, such as age, ethnicity, socioeconomic status, and obesity level. At 11.5-year follow-up, the median of new case rates of T2DM for men and women was recorded as 12.6 and 8.6 per 1,000 people per year, respectively.

Results found no statistically significant indication that a diabetic spouse increases a person's risk of developing T2DM, but there were contrasting results for men and women. In the study, a man with an obese wife was found significantly more likely to develop T2DM, with a 21% higher risk for each additional 5 kg/m^2 increase in wife's BMI, with results adjusted to account for the man's own BMI. Women's risk of T2DM did not increase with their husband's obesity; this was solely linked to their own level of obesity.

> "Recognising shared risk between spouses may improve diabetes detection and motivate couples to increase collaborative efforts to eat more healthily and boost their activity levels."

Further to these results, the team investigated the effect of a spouse with T2DM on obesity development with age. In a cohort of 7,187 men and women, it was found that living with a spouse who had T2DM led to much higher levels of obesity in individuals aged ≥55 compared to individuals whose spouse did not have T2DM.

The authors of the study commented: "Recognising shared risk between spouses may improve diabetes detection and motivate couples to increase collaborative efforts to eat more healthily and boost their activity levels. Obesity or T2DM in one spouse may serve as a prompt for diabetes screening and regular weight checks in the other. In particular, men whose wives are obese may benefit from being followed more closely."

New Device Controls Weight Loss and Type 2 Diabetes

CONTROL of Type 2 diabetes mellitus (T2DM) and obesity may become a much easier task, thanks to a new service provided by the UK's National Health Service (NHS), as presented at the EASD Annual Meeting and reported in a press release dated 12th September, 2017.

The new service, known as an 'Endobarrier' device, is endoscopically implanted and so does not require surgery. The device comprises a 60 cm plastic sleeve, which lines the small intestine. This allows the food to pass through the intestine, but prevents it from being absorbed. The device is removed after 1 year and aims to promote healthier living and encourage better habits which aid weight loss.

The study monitored the first 31 patients to receive the treatment (aged 28–62 years), out of a total of 50 who had received it, and 65 who had been accepted for the procedure. All of the patients had had T2DM for an average of 13 years, and 17 of them used insulin to control the condition. Despite having the implant, all patients were still encouraged to make lifestyle changes with regards to improving their diet and increasing exercise. The outcomes were monitored via a secure, online registry.

The study found patients had a significant, average weight loss of 15 kg, in addition to improved blood sugar control, reduced systolic blood pressure and liver fat. Those taking insulin reduced their doses from 100 to 30 units. At the time of analysis, 17 patients had reached 6 months post-treatment and 11 of those (65%) had successfully maintained weight loss improvements and diabetes control. Only two patients had their device removed early, one due to gastrointestinal haemorrhage and one due to liver abscess.

Dr Robert Ryder, City Hospital, Birmingham, UK, concluded: "This first NHS Endobarrier service demonstrates that Endobarrier therapy is highly effective in patients with obesity and diabetes that has been very hard to treat, with high patient satisfaction levels, and an acceptable safety profile." This exciting new treatment allows a surgery-free option for difficult-to-treat Type 2 diabetic, obese patients, with no need for them to remain in hospital (reducing infection risks), while being relatively safe and cost effective for the NHS.

> "This first NHS Endobarrier service demonstrates that Endobarrier therapy is highly effective in patients with obesity and diabetes that has been very hard to treat, with high patient satisfaction levels, and an acceptable safety profile."

Diabetic Patients Benefit from Six Meals a Day Rather Than Three

EATING six meals a day rather than three, whilst retaining the same calorie intake, has been shown to be beneficial for controlling blood sugar in obese patients. This study by Dr Emilia Papakonstantinou, Department of Food Science and Human Nutrition at the Agricultural University of Athens, and colleagues from Athens University Medical School, Attikon University Hospital, and Harokopio University, Athens, Greece, sought to explore the impact of meal frequency on glucose metabolism.

Forty-seven obese patients were divided into three groups; two with prediabetes and one with Type 2 diabetes mellitus. Each group was administered a specially designed weight-maintenance diet for 24 weeks, to be consumed as part of three or six daily meals. Patients followed either the three or six-meal structure for 12 weeks, before swapping to the alternate format for the remaining 12 weeks. Blood tests measuring insulin and glucose levels amongst other factors were taken at the start and end of these periods, and weight was measured every 2 weeks. Interviews assessing hunger, satiety, and desire to eat were also conducted.

Results showed that body weight remained stable throughout the study, but the six-meal group exhibited reduced glycated haemoglobin (HbA1c) and post-oral glucose tolerance test blood glucose levels, suggesting improved blood sugar control. Furthermore, the prediabetes groups showed a decrease in the occurrence of abnormally high insulin levels, as well as a shorter delay in the time taken to reach peak blood glucose following the ingestion of sugars. All three groups reported a decrease in hunger and desire to eat when following the six-meal plan.

> These results suggest that increased frequency of meals, consumed at regular times, may be a useful tool for doctors treating subjects with obesity and diabetes or prediabetes, especially those who are reluctant or unsuccessful dieters."

Dr Emilia Papakonstantinou, Agricultural University of Athens, concluded: "These results suggest that increased frequency of meals, consumed at regular times, may be a useful tool for doctors treating subjects with obesity and diabetes or prediabetes, especially those who are reluctant or unsuccessful dieters."

Lower Risk of Death Among Women with Diabetes Who Drink Caffeine

WOMEN with diabetes who regularly consume caffeine have a lower risk of death than those who do not drink caffeine at all, according to research displayed in a EASD press release, dated 14th September, 2017.

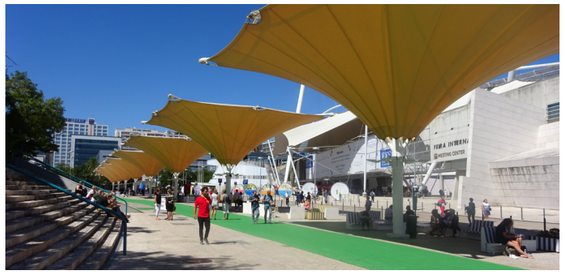
A reduction in the risk of death through consumption of caffeine has been well documented in previous studies, and researchers from the University of Porto, Porto, Portugal, with colleagues from various Portuguese institutions, sought to discover whether a similar effect would be seen in patients with diabetes.

Data relating to levels of caffeine intake and mortality in >3,000 men and women with diabetes were examined from the 1999–2010 National Health Nutrition Examination Survey (NHANES), where patients recorded their caffeine intake from coffee, tea, and soft drinks using dietary recalls. The results showed that among women with diabetes, there was a 51%, 57%, and 66% decreased risk of death in those consuming ≤100 mg, 100–200 mg, and >200 mg of caffeine per day, respectively, compared to non-consumers. However, no such effect was shown in men with diabetes. These findings were independent of factors such as age and race.

Additionally, while caffeine ingested from coffee reduced the risk of death from all causes, it was found that caffeine from tea provided a special protective effect against cancer, with women who had a high consumption of tea having an 80% lower risk of developing cancer compared to non-tea drinkers.

> Our study showed a dose-dependent protective effect of caffeine consumption on all-cause mortality among women.

The authors emphasised the importance of more studies to investigate these findings further: "Our study showed a dose-dependent protective effect of caffeine consumption on all-cause mortality among women. The effect on mortality appears to depend on the source of caffeine, with a protective effect of coffee consumption on all-cause mortality and cardiovascular mortality, and a protective effect of caffeine from tea on cancer mortality among women with diabetes. However, our observational study cannot prove that caffeine reduces the risk of death but only suggests the possibility of such a protective effect."



Transgender Diabetics Require More Specialist Support

ESTIMATES suggest that 1.4 million adults in the USA identified as transgender in 2016 and had been administered hormone therapy for gender confirmation. A study, reported in a EASD press release dated 13th September, 2017, has suggested that transgender individuals suffering from diabetes have a number of modifiable risk factors, including raised levels of triglycerides and low-density lipoproteins, that contribute to increased diabetes severity and complications, possibly as a result of gender reassignment treatment.

> For both transgender men and women, it is critical to reduce risk factors for diabetes in order to prevent CVD and other complications.

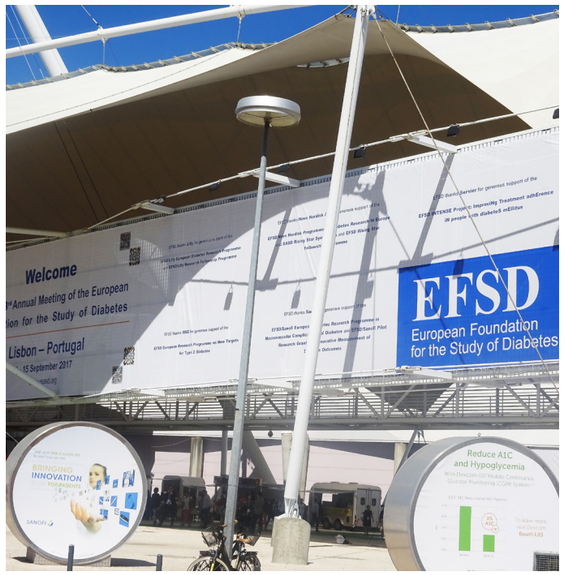
The study, led by Dr Patricia Kapsner, University of New Mexico, Albuquerque, New Mexico, USA, analysed the aforementioned modifiable risk factors of 300 transgender individuals, describing 9 of whom suffered from either Type 1 or 2 diabetes mellitus (T1/2DM). The results showed that diabetic transgender women were more likely to be obese, and exhibit higher levels of both triglycerides and low-density lipoproteins compared to non-diabetic transgender women; this was thought to be caused by the administration of oestrogen. Additionally, vitamin D levels were shown to be reduced, and dysphoria and psychosocial issues, such as substance abuse, contributed to poorer disease management.

Diabetic patients have been shown to be more likely to develop cardiovascular disease (CVD), and the hormone therapy transgender patients undergo has been shown to affect lipid profiles, blood pressure, weight, and blood glucose, possibly exacerbating this risk. "For both transgender men and women, it is critical to reduce risk factors for diabetes in order to prevent CVD and other complications," explained the authors.

The study is limited by the small sample size, where only 9 of the 300 transgender patients suffered from diabetes (4 with T1DM and 5 with T2DM), but the investigation nonetheless highlighted a key lack of understanding regarding the management of both T1DM and T2DM in transgender patients. "We hope that our research will help boost transgender health and diabetes services to provide effective support and medication to those who need it most," concluded the research team.

New Associations Between Cardiovascular Disease and Type 2 Diabetes Mellitus

INCREASED risk of developing and dying from cardiovascular diseases (CVD) has been found to be associated with hospital admissions where non-alcoholic fatty liver disease (NAFLD) is present. These new findings from the Scottish Diabetes Research Network were presented at the EASD annual meeting 2017, as reported in a press release from the event.



> “Because non-alcoholic fatty liver independently raises the risk of cardiovascular disease and mortality in people with T2DM, preventing the condition by avoiding unhealthy lifestyles in people with diabetes is vital.”

NAFLD results from the accumulation of fat within liver cells. It characteristically affects approximately three-quarters of obese adults who have Type 2 diabetes mellitus (T2DM). Research has previously determined a link between NAFLD and patients with CVD, but until now it had not been established whether this link was also prevalent among patients with T2DM.

The study, performed by Prof Sarah Wild, University of Edinburgh, Edinburgh, UK, and Prof Christopher Byrne, University of Southampton, Southampton, UK, analysed hospital and death record data in >133,300 adult T2DM patients, specifically looking at possible links between NAFLD and CVD. The patients were all located in Scotland, had been diagnosed with T2DM between 2004 and 2013, and had had at least one hospital admission within this period.

NAFLD was noted in 1,998 patient hospital records over the 4.7-year follow-up. It was found to be associated with an approximately 62% increase in incidence of CVD, including both first-time and current CVD events, compared to patients without NAFLD. Presence of NAFLD was also associated with a 40% increased risk of death from CVD, as well as a doubled risk of death from any cause, and 41-fold increased risk of death from liver cancer.

The authors stated: “Because non-alcoholic fatty liver independently raises the risk of cardiovascular disease and mortality in people with T2DM, preventing the condition by avoiding unhealthy lifestyles in people with diabetes is vital.” The results from this study will hopefully encourage preventative procedures for NAFLD to be enforced, as well as the research and production of new, effective, and safe treatment methods.

Type 2 Diabetes Mellitus May be Associated with Lower Risk of Aortic Aneurism

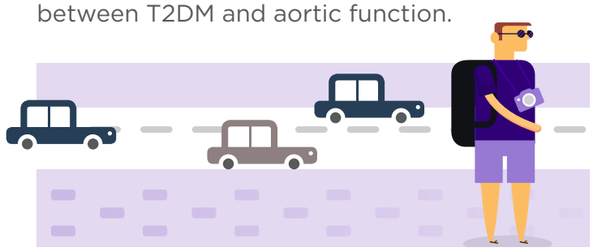
DECREASED short-term risk of aortic aneurism (AA) and aortic dissection (AD) may be associated with Type 2 diabetes mellitus (T2DM), suggests a new study presented in a press release on the 13th September at the 2017 EASD Annual Meeting in Lisbon, Portugal. The study, performed by Dr Tarik Avdic from the Swedish National Diabetes Register, Gothenburg, Sweden and colleagues from numerous Swedish University Hospitals and the Swedish Vascular Registry (Swedvasc) research group, also discovered T2DM patients to have a reduced risk of death following hospitalisation for AA.

> “Glycated cross-links, created by various mechanisms, in aortic tissue among T2DM patients may play a protective role in progression of aortic disease.”

Assessing data from 1998–2015, which included 448,319 patients with T2DM and 2,251,015 healthy controls, 2,878 cases of AA were reported in patients with T2DM versus 16,740 in the control group. Furthermore, cases of AD totalled just 200 in the T2DM group, compared to 2,019 in the control group. Thus, these results indicate that individuals with T2DM have a 28% lower risk of AA, and a 47% lower risk of AD compared to healthy controls.

After adjusting for variables, this study also showed a statistically significant reduction in mortality (12%) up to 2 years after hospitalisation for AA in patients with T2DM. Unadjusted survival rates following hospitalisation for AA in T2DM patients versus the control group were 84.2% versus 80.9% after 3 months; 74.7% versus 71.7% after 1 year; and 66.7% versus 64.2% after 2 years, respectively. Higher survival rates in this group were also noted following AD, but there the results were not statistically significant.

Explaining these results, the authors stated that: “Glycated cross-links, created by various mechanisms, in aortic tissue among T2DM patients may play a protective role in progression of aortic disease.” Whilst more research needs to be completed to fully understand the processes that may lead to this protective quality, researchers are confident that this finding will lead to a more complete understanding of the interaction between T2DM and aortic function.



Certain Individuals Could be Genetically Predisposed to Type 1 Diabetes Mellitus

DEVELOPING Type 1 diabetes mellitus (T1DM) is strongly associated with certain genetic variants, according to research displayed in a EASD press release dated 12th September, 2017. This is the first study to suggest that people can be genetically predisposed to T1DM, and these results could potentially explain why the disease develops at different ages.

While T1DM typically affects younger patients, it can develop in patients >30 years of age, when it is known as late-onset T1DM. In children and young adults, certain groups of genes, in particular the DR3 and DR4 alleles of a group of genes named the HLA complex, are linked to the risk of developing the disease. When these alleles occur in pairs (of either homozygous DR3/DR3 or DR4/DR4] or compound heterozygous [DR3/DR4] genotype) the risk is at its highest. The researchers from the University of Exeter, Exeter, UK, investigated whether a similar link occurs in late-onset T1DM patients.

> “Whilst all three major genotypes greatly increase risk of T1DM throughout life, population analysis has shown for the first time that DR4/DR4 specifically predisposes to T1DM over 30 years of age and carriers of this genotype have the highest risk for development of late-onset T1DM.”

They observed T1DM development in 120,000 people from birth to the age of 60 years from the UK Biobank in those individuals with the highest-risk HLA groups (DR3/DR3, DR4/DR4, and DR3/DR4). It was found that the highest-risk HLA groups made up 61% of all T1DM cases, despite comprising just 6.4% of the UK population.

Following comparison of the DR3/DR3, DR3/DR4, and DR4/DR4 high risk groups, there was a 1.2%, 4.2%, and 3.5% risk of developing T1DM during a lifetime, respectively. The mean age of diagnosis was

also 17, 28, and 38 years of age for the three genotypes, respectively, showing significant differences between these high-risk HLA groups. In the DR4/DR4 group, for example, 71% of cases were in individuals diagnosed after the age of 30 years, in comparison to just 26% in the DR3/DR3 genotype.

"Whilst all three major genotypes greatly increase risk of T1DM throughout life, population analysis has shown for the first time that DR4/DR4 specifically predisposes to T1DM over 30 years of age and carriers of this genotype have the highest risk for development of late-onset T1DM," said the authors.

New Device Improves Type 1 Diabetes Mellitus Management and Birth Outcomes

PREGNANT women with Type 1 diabetes mellitus can better manage their disease and improve birth outcomes through continuous blood sugar level monitoring using a new, implanted device, according to new research presented at the EASD annual meeting 2017, reported in a press release dated 15th September, 2017.

High blood sugar levels in diabetic, pregnant women, cause one in two neonates to experience birth complications. These can be very serious, even resulting in stillbirth. Research has attempted to improve this but with limited progress, and birth outcomes have not improved over the last three to four decades.

The trial analysed the implanted continuous glucose monitoring (CGM) device, which provides 288 glucose readings every day, in comparison to 4–8 using a traditional finger-prick test. A total of 214 pregnant women aged between 18–40 who required daily insulin to manage their condition were included in the study. They were randomly assigned into two groups: one using the CGM device and the other the finger-prick method to monitor glucose levels. Those with the device were required to wear it for approximately 24 weeks.

> "For a long time there has been limited progress in improving birth outcomes for women with Type 1 diabetes mellitus, so we are pleased that our study offers a new option to help pregnant women with diabetes and their children."

The device helped to reduced blood sugar levels by 0.2%, the study found. It helped women to maintain normal blood sugar levels (68% compared to 61% of finger-prick users), and reduce time spent with high blood sugar levels (27% compared to 32%). The birth outcomes of those using the device were improved, with fewer larger-than-average-sized babies (53% compared to 69%), reduced neonate intensive care admission for >24 hours (27% compared to 43%) and reduced numbers of babies born with low blood sugar (15% compared to 28%).

This study represents an important new treatment option for a vulnerable population facing an unmet clinical need. Dr Denice Feig, University of Toronto and Sinai Health System, Toronto, Canada, said: "For a long time there has been limited progress in improving birth outcomes for women with Type 1 diabetes mellitus, so we are pleased that our study offers a new option to help pregnant women with diabetes and their children."

Further Study Required to Improve Pregnancy Outcomes in Diabetic Mothers

PREGNANCY outcomes remain poor in women with Type 1 diabetes mellitus (T1DM) despite significant advances in diabetes and obstetric care in recent years, suggests a study presented at the EASD 2017 Annual Meeting in Lisbon, Portugal on Friday 15th September.

> "This study provides the important, preliminary results required to spur new investigations into tackling the currently unmet need of this vulnerable demographic."

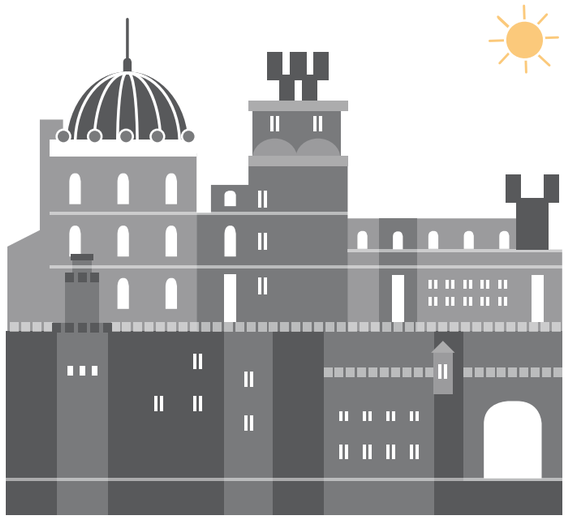
This study, by Dr Lowri Allen of the Diabetes Research Group, Cardiff University, Cardiff, UK and colleagues from Cardiff and Swansea Universities, UK used the Brecon Cohort, an almost complete register of people diagnosed T1DM before the age of 15 in Wales, UK since 1995, to compare women with T1DM aged <35 to healthy controls in terms of pregnancy outcomes. Due to its size, national coverage, and community-based nature, this cohort represents a source of data without many of the typical biases observed in similar studies, thus resulting in more reliable conclusions.

From a pool of nearly 200,000 eligible births between 1995–2013, 330 were to mothers with T1DM. Of this group, 66% gave birth via caesarean section, compared to just 18% in the general population, as well as a 4-week shorter gestation period (35.7 versus 39.7 weeks, respectively). Adverse outcomes, such as pre-eclampsia, stillbirth, and preterm birth were also significantly more common: 3, 10, and 11-times more likely than in women without T1DM, respectively. The babies born to these mothers with childhood-onset T1DM were also more likely to encounter adverse effects, such as low birth weight (twice as likely), have congenital malformations (around three-times more likely), and be admitted to hospital within the first year of life (three-times more likely).

This study formed part of a larger body of work aiming to identify individuals with T1DM who develop early complications and may benefit from new interventions, such as immunotherapy, which would seek to preserve the insulin-producing beta cells in the pancreas. "Measures to preserve beta cell function may improve outcomes and further studies are required to explore this," explained the authors. This study provides the important, preliminary results required to spur new investigations into tackling the currently unmet need of this vulnerable demographic.

Biomarker May be Able to Predict Risk of Developing Pre-Eclampsia

PRE-ECLAMPSIA (PE) risk in pregnant women with Type 1 diabetes mellitus (T1DM) can be predicted through the use of leucine-rich alpha-2-glycoprotein (LRG1) as a biomarker, according to research presented in a EASD press release dated 15th September, 2017.



Delivery of the baby is currently the only treatment for PE, which can cause complications based on the mother's gestational period. Under the NHS, PE care normally consists of careful monitoring of the woman's blood and proteinuria, and if appropriate, blood pressure medicines are administered. Therefore, new methods for early warning and specific treatments for the condition are urgently required.

The researchers, Ms Alice Cheung, Prof Tim Lyons, and Dr Chris Watson, Centre for Experimental Medicine, Queen's University Belfast, Belfast, UK, and colleagues from Australia, Norway, and the USA, aimed to discover whether LRG1, an indicator of both inflammation and angiogenesis, could be used as a predictor of PE in pregnant women with T1DM, as has previously been suggested.

A group of 62 pregnant women from the MAMPED cohort were used for the study; 44 had T1DM of which 23 later developed pre-eclampsia and 21 who did not, as well as a control group of 18 healthy pregnant women. The two groups with T1DM were matched for age, duration of diabetes, glycated haemoglobin levels, and the number of viable pregnancies. The current gold standard for predicting onset of pre-eclampsia, the sFlt enzyme biomarker, had already been measured in the patients, and blood plasma was sampled during the second trimester and analysed for the LRG1 biomarker.

It was found that in women with T1DM who developed PE, LRG1 levels were on average 25% higher than in those women who did not develop PE, which was a statistically significant difference (51 µg/mL versus 41 µg/mL). The researchers commented: "This significant increase preceded the clinical signs and symptoms of pre-eclampsia, whereas sFlt did not predict PE at this gestational age."

They concluded: "LRG1 may have utility as an early predictor of PE, and could provide novel insights into disease mechanisms for PE in diabetic women."

> "LRG1 may have utility as an early predictor of PE, and could provide novel insights into disease mechanisms for PE in diabetic women."